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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/724,245	11/28/2003	Chirag Deepak Dalal	VRT0107US	1642
60429	7590	06/13/2007		
CSA LLP 4807 SPICEWOOD SPRINGS RD. BLDG. 4, SUITE 201 AUSTIN, TX 78759			EXAMINER MCLEAN MAYO, KIMBERLY N	
			ART UNIT 2187	PAPER NUMBER
			MAIL DATE 06/13/2007	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/724,245

Applicant(s)

DALAL ET AL.

Examiner

Kimberly N. McLean-Mayo

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 26 March 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-27 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 6/9/07.
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- ☐ Notice of Informal Patent Application
- ☐ Other: \_\_\_\_\_.

### DETAILED ACTION

1. The enclosed detailed action is in response to the Amendment submitted on March 26, 2007 and the Information Disclosure Statement submitted on March 29, 2007.

#### *Claim Rejections - 35 USC § 102*

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claim 1-5, 7, 9-11 and 13-27 is rejected under 35 U.S.C. 102(e) as being anticipated by Kusters et al. (USPN: 6,681,310).

Regarding claims 1-2, 16-17, 20-21 and 24-25, Kusters discloses identifying a first set of physical storage devices to reserve as backup for a second set of physical storage devices configured to provide a logical volume wherein the second set of physical storage devices is configured using an intent [storage characteristics, seek and data-rate characteristics] associated with the logical volume (C 7, L 26-29; a mirrored storage device has allocated to it a reserved storage to mirror its contents), wherein the intent is stored on the second set of physical storage devices and wherein the intent comprises information identifying a set of characteristics specified by a creator [vendor] of the logical volume (C 7, L 14-52; C 6, L 60-63; the volume providers are stored on the storage devices and the volume providers are configured with vendor-specific tools; the common volume manager interfaces with the volume providers to determine

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the characteristics of the storage device to allow it to, for example, set up mirroring pairs among volumes having similar characteristics), and each physical storage device of the first set of physical storage devices and the second set of physical storage devices conforms to the intent (C 7, L 26-29). Additionally regarding claim 20, all hardware devices have software counterparts to control their operations.

Regarding claims 3, 18, 22 and 26, Kusters discloses the reserving of the first set of physical storage devices occurring at a time that the second set of physical storage devices is configured to provide the logical volume (C 7, L 14-41; the volume manager stores logical volumes onto the physical storage devices and configures the mirrored volume accordingly)

Regarding claims 4-5, 19, 23 and 27, Kusters discloses selecting a backup physical storage device of the first set of physical storage devices to replace a failed physical storage device of the second set of physical storage devices without having to search for the backup physical storage device (C 7, L 26-29; mirrored devices operate such that the mirror stands in place of the failed disk when such a failure occurs automatically without the system having to search for the mirror storage).

Regarding claim 7, Kusters discloses the intent comprising a rule used to configure the second set of physical storage devices for the logical volume (C 3, L 65-67; C 7, L 17-32, L 45-52; the rule is established by the tool which configures the storage device).

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Regarding claim 9, Kusters discloses the rule corresponds to a command used to configure the logical volume (C 7, L 17-32, L 45-52).

Regarding claims 10-11, Kusters discloses the rule is used to identify the available physical storage devices to configure the logical volume (C 7, L 14-16; C 7, L 17-32, L 45-52; rule [configuration tool] configures the storage devices and thus it is evident that the rule must know what devices are available to do so).

Regarding claims 14-15, Kusters discloses the configuration tool/volume manager ensuring [by actually configuring the device(s)] that the first set of physical storage devices is available and conforms to the intent of the logical volume and meets an availability requirement (C 7, L 14-52).

Regarding claim 13, Kusters discloses the logical volume is created when the logical volume is created (in a system comprising physical storage devices; the physical storage devices are configured into volumes when incorporated into the system and thus the logical volumes is created when configured).

### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

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having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kusters (USPN: 6,6681,310) in view of Jacobsen (USPN: 5,615,352)

Kusters discloses the limitations cited above, however, Kusters does not disclose using a (reserved) backup physical storage device of the first set of physical storage devices to increase a size of the logical volume. Jacobson teaches the concept of using reserve physical storage devices (spares) to increase the size of the data storage system [and thus the logical volumes therein] (C 11, L 15-26). This feature taught by Jacobson provides an efficient means of providing additional space to meet the storage requirements of the system. Hence, it would have been obvious to one of ordinary skill in the art to use Jacobson's teachings in the system taught by Kusters for the desirable purpose of efficiency and improved performance.

6. Claims 8 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kusters (USPN: 6,6681,310) in view of Cabrera (USPN: 6,904,599).

Kusters discloses the limitations cited above, however, Kusters does not disclose storing the rule with the logical volume when the logical volume is created. Cabrera discloses storing the rule with the logical volume when the logical volume is created (C 12, L 52-54). This feature taught by Cabrera provides efficiency by providing storage management that does not require the administrators to explicitly specify the volume configuration or have detailed of the volume providers and storage devices. Hence, one of ordinary skill in the art would have been motivated to incorporate Cabrera's teachings with the system taught by Kusters for the desirable purpose of efficiency.

***Response to Arguments***

7. Applicant's arguments filed March 26, 2007 have been fully considered but they are not persuasive.

Regarding Applicant's argument concerning the teachings of Kusters, the Examiner disagrees. In Kusters' system, the storage devices are configured using vendor specific rules and configuration formats and thus the storage devices are configured using an intent associated with the logical volume. The intent, additionally, indicates to the common volume manager the underlying characteristics of the storage device to allow it to mirror/stripe data among different volumes having similar characteristics. The underlying characteristics of the volumes are the intent associated with the volume.

***Conclusion***

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

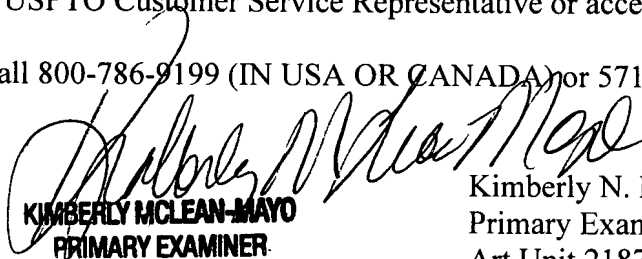
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however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kimberly N. McLean-Mayo whose telephone number is 571-272-4194. The examiner can normally be reached on Monday-Friday (10-6:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Donald Sparks can be reached on 571-272-4201. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



**KIMBERLY MCLEAN-MAYO**  
**PRIMARY EXAMINER**

Kimberly N. McLean-Mayo  
Primary Examiner  
Art Unit 2187

KNM

June 9, 2007